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**U.S. Environmental Protection Agency, Region 5
 Field Quality Procedures**

**TECHNICAL FIELD
 STANDARD OPERATING PROCEDURE**

Standard Operating Procedure for collection of VOC samples

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1.0 PURPOSE

1.1 This standard operating procedure describes steps for collecting VOC samples in the field for later analysis at Region 5 Chicago Regional Laboratory (CRL). This SOP is intended for use by field technicians so samples are collected consistently and documented properly.

2.0 APPLICABILITY/SCOPE

2.1 This document applies to the collection of VOC samples in the field. Field technicians should follow this SOP to ensure samples are collected properly and consistently, and that all documentation is completed.

2.2 The official signed copy of this SOP will be stored in the QA Tracking system under the folder "VOC SOP" and will be available to all field sampling staff. The SOP should be reviewed annually.

2.3 This document outlines obtaining the sampling vessels (i.e. bottles or canisters) from CRL, collecting and documenting the sample in the field, completing the chain-of-custody, and returning the samples to CRL.

2.4 This SOP is written to provide general instruction for collecting samples; individual projects will have specific needs and processes. Refer to the project specific Quality Assurance Project Plan (QAPP) or sampling plan for details.

3.0 DEFINITIONS

CRL	Chicago Regional Laboratory
GMAP	Geospatial Monitoring of Air Pollutants
PID	Photo Ionization Detector
QAPP	Quality Assurance Project Plan
VOC	Volatile Organic Compounds

4.0 SUMMARY OF METHOD/PROCEDURE

4.1 Field staff will use containers supplied by CRL to collect air samples by simply opening the valve on the canister, allowing the sample to enter the canister or bottle and then closing the valve. Staff will document relevant information on the sample labels (supplied by CRL) and chain of custody form (supplied by CRL). Labelled samples and the chain of custody form(s) are then returned to CRL's sample custodian. Results will be reported by CRL at a future date.

5.0 PERSONNEL QUALIFICATION/RESPONSIBILITIES

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5.1 Personnel involved in the collection of samples must meet the minimum training requirements for safety and technical expertise. Minimum training will include at least three years prior experience in the field of ambient air monitoring; the field staff is also responsible for reviewing this SOP prior to conducting sampling using passive canisters. Approved copies of this SOP and the project-specific air monitoring Quality Assurance Project Plan (QAPP) will be available to field staff throughout the duration of sampling activities.

6.0 EQUIPMENT AND SUPPLIES

6.1 Equipment used for the collection of VOC samples will vary depending on the objective of the project and the compounds of interest. Metal canisters or glass bottles could be used to hold the sample, and different volumes of containers are available. Both factors are dictated by the compounds of interest, project goals, and resource availability. Regulators/orifices (obtained from CRL and provided with the vessels) may be attached to the vessels to restrict the flow, allowing for a longer sampling time.

6.2 CRL will supply field staff with sample labels and chain of custody forms to document sample information.

7.0 REAGENTS AND STANDARDS

7.1 No reagents or standards are used during sample collection.

7.2 All reagents and standards used as part of the laboratory analysis can be found in section 7 (Reagents & Standard Gas Mixtures) of the Central Regional Laboratory's "SOP for VOCs in Air from TO-15" CRL SOP MS-005 Revision 6, Dated 06/04/2013.

8.0 HEALTH AND SAFETY CONSIDERATIONS

8.1 Field staff must complete the minimum safety training as required by the USEPA. Minimum safety trainings include the USEPA 24 hour field safety course and annual 8 hour refresher courses as required. Any necessary health and safety equipment needs for specific projects must be made in coordination with the Regional Safety Manager.

9.0 INTERFERENCES

9.1 The possibility of contamination of canister samples exists due to the improper handling and wear of canister valves.

9.2 Special attention must be given to canisters with QT valves; QT valves are normally in a closed position to minimize leakage, a protective cover should be placed over the valve to minimize leakage and prevent contamination of the canister. Bottles with QT valves should be evacuated using a dual stage pump in the field on the day of sampling, or as close to the day of

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sampling as possible. The dual stage pump should be capable of creating a strong vacuum within the bottle.

9.3 Additional possibilities of laboratory and storage contamination and preventative procedures can be found in section 5 (Caution & Interferences) of the Central Regional Laboratory's "SOP for VOCs in Air from TO-15" CRL SOP MS-005 Revision 6, Dated 06/04/2013.

10.0 PROCEDURE

10.1 Instrument or Method Calibration and Standardization

No instrument or method calibrations are expected for sample collection.

Steps should be taken to standardize sample collection as much as possible. Field technicians should consider the following points:

Avoid wearing perfumes, lotions, or hand sanitizers prior to or during sample collection.

Record data (GPS values, time, etc) from the same source each time.

If taking grab samples, hold away from the body.

Note any nearby activity that may influence the sample on the sample label and in field notes.

An upwind or background sample may be helpful; refer to the project QAPP or sampling plan.

Copy or photograph sample labels and the completed chain of custody form.

10.2 General field or equipment procedures

Field staff must request VOC sample bottles or canisters from CRL's sample coordinator (Amanda Wroble) by completing "CRL Form 008 Rev 1.1- November 2013". CRL chemists are available to discuss, and recommend, possible lab analyses. The lab may need some time to ensure sufficient, appropriate sample containers are available, and may need time to prepare the analysis equipment. Field staff should also be familiar with the sample return process in order to efficiently return the samples to the sample custodian (Rob Snyder 312-353-9083). Information on shipping samples are available on CRL Form 008 Rev 1.1- November 2013.

10.3 Sample Collection

1. Field technicians will collect samples based on the project's sampling plan (if available) or based upon observations or data from the field. Technicians may use equipment (GMAP, PID, etc.) to determine when compounds may be present to take a sample, or could take a sample when odors are present (if the field project is driven by odor complaints).
2. When preparing to collect a sample the field staff must minimize any localized, non-relevant sources (i.e. writing instruments like markers, vehicle gas tanks, nearby non-target activities, etc).
3. For grab samples, open the vessel to ambient air. It may be necessary to check and record the initial pressure in the canister or bottle. One should hear air rushing into the vessel or a "pop". When the sound stops (approximately 5-20 seconds) air has filled the vessel and it can be closed.

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4. For samples collected over a greater amount of time (hours to days), attach the orifice to the vessel, secure the vessel/orifice to a support, then open the vessel inlet to begin sample collection. Air will begin to flow into the vessel; the field technician may or may not be able to hear this.. Vessels with an orifice should be closed and collected before the vessel is full (i.e. vessel pressure equals ambient pressure).
5. Record all information on the sample label provided by CRL.
6. Record relevant sample information onto the chain of custody form.

10.4 Sample Handling and Preservation

1. Samples should be handled gently and packed to prevent breakage. Ensure all information has been recorded on sample labels.
2. Transport or mail samples back to CRL's sample custodian with completed chain of custody form.

10.5 Sample Preparation and Analysis

Samples will not be prepared or analyzed in the field. Samples will be prepared and analyzed by CRL following their procedures in the laboratory.

10.6 Troubleshooting

1. Field technicians should inspect sample vessels just before collecting a sample to be sure the vessel hasn't been compromised prior to use. Do not use any vessel suspected of having a leak prior to sample collection.
2. Technicians may hear a hiss or pop as air rushes into a vessel (especially for a grab sample). No sound may indicate the vessel leaked prior to use.
3. Record all information onto the sample label at the time of collection.

10.7 Data Acquisition, Calculations, and Data Reduction

N/A

10.8 Data Review and Acceptance

Ensure all fields on the sample label(s) and chain of custody form(s) have been completed.

11.0 WASTE MANAGEMENT

N/A

12.0 DATA AND RECORDS MANAGEMENT

12.1 All COC forms and other field notes will be submitted to the project manager and will be stored with other data associated with the project (i.e. GMAP data). The CRL will complete the analysis of the canisters or bottles as soon as possible after sampling. CRL will submit validated data to the project manager.

13.0 QUALITY CONTROL & QUALITY ASSURANCE

The field staff must make note on sample label and field notes of any deviations from sample plan or procedure. Also note anything unusual or unexpected that may influence the sample results (i.e. markers, vehicle fuels, newly paved roads, nearby non-target activities, etc.).

14.0 REFERENCES

SOP for VOCs in Air from TO-15 CRL SOP MS-005 Revision 6, Dated 06/04/2013

15.0 ATTACHMENTS

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APPENDIX A	CRL Form 008 Rev 1.1- November 2013
APPENDIX B	CRL Sample Label
APPENDIX C	CRL Chain of Custody

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APPENDIX A

CRL Form 008 Rev 1.1- November 2013



**U.S. ENVIRONMENTAL PROTECTION AGENCY—REGION 5
CHICAGO REGIONAL LABORATORY
ANALYTICAL REQUEST FORM**

This analytical request form should be completed before sending samples to CRL for analysis. The requester should complete all relevant fields and email the form and electronic copy of the quality assurance project plan (QAPP) and/or sampling plan to the CRL Sample Coordinator Amanda Wroble (wroble.amanda@epa.gov).

GENERAL	
Requester _____	Request Date _____
Title _____	Division/Office _____
Address _____	
Phone _____	E-mail _____
<input type="checkbox"/> One-time or <input type="checkbox"/> Continuous request (check one) A continuous request is defined as a standing request for the same analytical service (analyses and sample matrices) that may span several sites/projects. Please note that submission of this analytical request form is only required once for a continuous request. However, QAPPs and/or sampling plans should still be submitted for every site/project.	
Site Name and Location _____	
Please attach an electronic copy of a detailed site and project description (QAPP and/or sampling plan)	
Expected Arrival Date at CRL _____	
Turnaround Time (standard TAT is 45 days) _____	

CRL ANALYTICAL SERVICES

Disclaimer:

The effective versions of all Standard Operating Procedures (SOPs) are available in pdf format on the R5 Intranet. By submitting an analytical request form, the requestor is implying consent for the use of the appropriate effective SOPs. It is the responsibility of the requester to check the intranet for SOP deviations (known at CRL as pen&ink changes) and version updates. Should the CRL suspect that an SOP deviation affect the data, the CRL Sample Coordinator will contact the requester via email or phone to obtain a pen&ink consent. As defined by CRL, SOP deviations "affect the data" when there is a change in the laboratory's ability to identify or quantify the analytes in the SOP or when there is a deviation in the regulatory method.

Form Instructions:

- In the table below, select the appropriate checkbox to request an analysis and enter the proposed number of samples of each matrix type. Analysis not currently available for matrix where box is shaded.
- For other/waste, briefly describe matrix in the space provided. Additional space for detailed matrix description is available at the end of the table, if needed.
- For multi-analyte tests, list specific classes/subsets (i.e., PAHs, RCRA metals, etc.) in the space given at the end of this table, if requested.

Analytical & Inorganic				
Analysis	Check to Request	Sample Matrix and Number		
		soil/sediment	water/liquid	other/waste*
acidity	<input type="checkbox"/>		_____	_____
alkalinity	<input type="checkbox"/>		_____	_____
biochemical oxygen demand-5 day (BOD)	<input type="checkbox"/>		_____	_____
carbonaceous BOD-5 day (CBOD)	<input type="checkbox"/>		_____	_____
residue, non-filterable (TSS)	<input type="checkbox"/>		_____	_____
residue, filterable (TDS)	<input type="checkbox"/>		_____	_____
total solids (TS)	<input type="checkbox"/>	_____	_____	_____
total volatile solids (TVS)	<input type="checkbox"/>	_____	_____	_____
cyanide, total	<input type="checkbox"/>	_____	_____	_____
cyanide, amenable to chlorination	<input type="checkbox"/>		_____	_____
ammonia-N	<input type="checkbox"/>	_____	_____	_____
nitrate-nitrite-N	<input type="checkbox"/>		_____	_____
total phosphorus (TP)	<input type="checkbox"/>	_____	_____	_____
dissolved phosphorus (DP)	<input type="checkbox"/>		_____	_____
total Kjeldahl nitrogen (TKN)	<input type="checkbox"/>	_____	_____	_____
total organic carbon (TOC)	<input type="checkbox"/>	_____	_____	_____
dissolved organic carbon (DOC)	<input type="checkbox"/>		_____	_____
chemical oxygen demand (COD)	<input type="checkbox"/>	_____	_____	_____
anions**	<input type="checkbox"/>	_____	_____	_____
distillable fluoride	<input type="checkbox"/>		_____	_____
anions (perchlorate) (inactive)	<input type="checkbox"/>	_____	_____	_____
turbidity	<input type="checkbox"/>		_____	_____
PM-10 (inactive)	<input type="checkbox"/>			_____ air filter
PM-2.5 (inactive)	<input type="checkbox"/>			_____ air filter
grain size	<input type="checkbox"/>	_____		_____
specific gravity	<input type="checkbox"/>	_____		_____
pH	<input type="checkbox"/>	_____	_____	_____
corrosivity by pH	<input type="checkbox"/>		_____	_____

Analytical & Inorganic (continued)

Analysis	Check to Request	Sample Matrix and Number		
		soil/sediment	water/liquid	other/waste*
ignitability by flashpoint	<input type="checkbox"/>		_____	_____
solvent ID	<input type="checkbox"/>		_____	_____
water content	<input type="checkbox"/>		_____	_____
density	<input type="checkbox"/>		_____	_____
paint filter liquid test	<input type="checkbox"/>		_____	_____
chromium (VI)	<input type="checkbox"/>	_____	_____	_____
mercury	<input type="checkbox"/>	_____	_____	_____

Metals

Analysis	Check to Request	Sample Matrix and Number		
		soil/sediment	water/liquid	other/waste*
total metals** (except Hg & Cr (VI))	<input type="checkbox"/>	_____	_____	_____ air filter
dissolved metals** (except Hg & Cr (VI))	<input type="checkbox"/>		_____	_____
hardness	<input type="checkbox"/>		_____	_____

Organic

Analysis	Check to Request	Sample Matrix and Number		
		soil/sediment	water/liquid	other/waste*
semi-volatiles** (SVOCs)	<input type="checkbox"/>	_____	_____	_____
alkylphenols**	<input type="checkbox"/>		_____	_____
bisphenol A (BPA)	<input type="checkbox"/>		_____	_____
nonylphenol 1- and 2-ethoxy carboxylates ** (NPECs)	<input type="checkbox"/>		_____	_____
nonylphenol and octylphenol ethoxylates** (APEOs)	<input type="checkbox"/>		_____	_____
perfluorinated compounds** (PFCs)	<input type="checkbox"/>		_____	_____
volatiles** (VOCs)	<input type="checkbox"/>	_____	_____	_____
1,4-dioxane, THF	<input type="checkbox"/>		_____	_____
air toxics**	<input type="checkbox"/>			_____ air

Organic (continued)

Analysis	Check to Request	Sample Matrix and Number		
		soil/sediment	water/liquid	other/waste*
methane	<input type="checkbox"/>			_____ air
pesticides**	<input type="checkbox"/>	_____	_____	_____
atrazine	<input type="checkbox"/>	_____	_____	_____
chlordane (inactive)	<input type="checkbox"/>	_____	_____	_____
toxaphene (inactive)	<input type="checkbox"/>	_____	_____	_____
PCB Aroclors**	<input type="checkbox"/>	_____	_____	_____
total petroleum hydrocarbons (TPH) (inactive)	<input type="checkbox"/>	_____		_____
oil & grease	<input type="checkbox"/>		_____	_____

Toxicity Characteristic Leaching Procedure (TCLP)

Analysis	Check to Request	Sample Matrix and Number		
		soil/sediment	water/liquid	other/waste*
TCLP VOCs	<input type="checkbox"/>	_____	_____	_____
TCLP SVOCs	<input type="checkbox"/>	_____	_____	_____
TCLP metals	<input type="checkbox"/>	_____	_____	_____
TCLP Hg	<input type="checkbox"/>	_____	_____	_____
TCLP pesticides	<input type="checkbox"/>	_____	_____	_____

***Additional Matrix Description**

Please describe *other/waste* matrix, if not specified above. _____

****Specific Analyte Class/Subset Request**

Please list or attach specific class/subset for multi-analyte test, if requested. _____

NON-STANDARD REQUESTS

For analyses/matrices not listed above, inactive analyses, or project specific requirements (i.e., quality control limits, reporting limits, etc.), please contact the CRL Sample Coordinator (312.353.0375, wroble.amanda@epa.gov) to discuss. Requests for inactive analyses will require extra time to bring the analysis on-line.

CRL DATA FORMAT

The CRL standard data deliverable includes a pdf of the work order in addition to a pdf of the final report and electronic data deliverable (EDD), which include sample and quality control results. EDD typically refers to an Excel spreadsheet of the data, but EDDs are available in a variety of formats. A hardcopy report is available upon request.

CRL SAMPLE DISPOSAL POLICY

Due to space limitations in a controlled temperature environment, samples are relocated to secure room temperature storage six months after the analysis completion of the project. Notification of the intent to relocate the samples is given to the customer with sufficient time for the customer to respond with any objections. Samples remain in secure room temperature storage until the case/project is completed and the samples are no longer needed. Notification is given to the customer with sufficient time for customer response prior to sample disposal.

CRL SAMPLE SHIPMENT GUIDELINES

This document provides guidance in the shipment of samples to CRL for chemical analysis.

Before collecting samples, please refer to the attached table for sample sizes, containers, and preservatives.

Before shipping samples, please notify the CRL Sample Coordinator (312.353.0375, wroble.amanda@epa.gov) and/or CRL Sample Custodian (312.353.9083, snyder.robert@epa.gov) to arrange for sample receipt.

When packing samples for shipment:

- ✓ Seal individual samples in plastic bags, preferably Zip-loc bags.
- ✓ The temperature of samples requiring refrigeration during transport MUST be maintained at or below 6°C.
- ✓ Ice in a sealed plastic bag or reusable ice substitute freeze packs are acceptable cooling media.
- ✓ Chain of custody forms MUST be sealed in a large Zip-loc bag and taped to the inside of the cooler lid.
- ✓ Include the address to which the cooler should be returned.

After items are packed for shipment, secure the cooler with tape and attach a custody seal across the seam of the cooler lid.

All samples MUST be shipped overnight to arrive Monday thru Friday or hand-delivered. No deliveries are accepted on weekends or Federal holidays. Exceptions may be made on a case by case basis dependent on sampling priority/emergency status.

Send all samples to:

Robert Snyder
US EPA Region 5
Chicago Regional Laboratory
536 S. Clark Street, 10th Floor
Chicago, IL 60605

CHICAGO REGIONAL LABORATORY (CRL) SAMPLE HOLDING TIME, PRESERVATION, AND CONTAINER REQUIREMENTS

Analysis	Water/Liquid Samples ¹			Soil/Sediment Samples ¹			Comments	
	Preservation	Container Type/Size	# of Containers	Holding Time	Preservation	Container Type/Size		# of Containers
Alkalinity				14 days				
BOD-5 Day				48 hours				
Carbonaceous BOD-5 Day				48 hours				
Residue, Filterable (TDS)	Cool, <6°C	1 L polyethylene/glass bottle	1	7 days				
Residue, Non-filterable (TSS)				7 days				
Total Solids (TS)/Total Volatile Solids (TVS)				7 days	Cool, <6°C	4 oz wide mouth glass jar	1	7 days
Cyanide/CN Amenable to Chlorination	Cool, <6°C NaOH to pH>12	250 mL polyethylene/glass bottle	1	14 days	Cool, <6°C	4 oz wide mouth glass jar	1	14 days
Ammonia-N					Cool <6°C	4 oz wide mouth glass jar	1	28 days from extraction to analysis
Nitrate-Nitrite-N								
Total/Dissolved Phosphorus					Cool <6°C	4 oz wide mouth glass jar	1	28 days from extraction to analysis
TKN	Cool, <6°C H ₂ SO ₄ to pH<2	500 mL polyethylene/glass bottle	1	28 days	Cool <6°C	4 oz wide mouth glass jar	1	28 days from extraction to analysis
TOC/DOC					Cool, <6°C	4 oz wide mouth glass jar	1	28 days
COD					Cool <6°C	4 oz wide mouth glass jar	1	28 days from extraction to analysis

¹ Matrices other than water/liquid or soil/sediment and additional matrix information are shown in *italics*.

Analysis	Water/Liquid Samples ¹			Soil/Sediment Samples ¹			Comments	
	Preservation	Container Type/Size	# of Containers	Holding Time	Preservation	Container Type/Size		# of Containers
Anions (bromide, fluoride, chloride, sulfate, nitrate, nitrite, ortho-phosphate)	Cool, <6°C	250 mL polyethylene/glass bottle	1	48hrs for nitrate, nitrite, and ortho-phosphate; 28 days for the rest	Cool, <6°C	4 oz glass jar	1	48 hrs from extraction to analysis for nitrate, nitrite, and ortho-phosphate; 28 days for the rest
Distillable Fluoride	Cool, <6°C	250 mL polyethylene/glass bottle	1	28 days				
Anions (perchlorate) (inactive)	none	500 mL polyethylene/glass bottle	1	28 days	none	8 oz glass jar	1	28 days
Turbidity	Cool, <6°C	250 mL polyethylene/glass bottle	1	48 hours				
PM-10 pre-weighed high-volume air filter (inactive)					Keep <32°C Archive 4+/-3°C	manila envelope	1	1 year
PM-2.5 pre-weighed high-volume air filter (inactive)					Ave. ambient sampling temp above 4°C ≤4°C Archive 4+/-3°C	filter cassette or petri dish	1	240 hrs (10 days) 30 days
Grain Size by Particle Size Analyzer					Cool, <6°C	4 oz wide mouth glass jar/polyethylene	1	1 year
Specific Gravity					Cool, <6°C	32 oz wide mouth glass jar	1	1 year
pH	Cool, <6°C	polyethylene/glass bottle	1	immediately ²	Cool, <6°C	4 oz wide mouth glass jar	1	ASAP ³

² Immediately for NPDES compliance purposes is within 15 minutes of sample collection.

³ ASAP for RCRA Characteristic of Corrosivity is within a few days of receipt at the laboratory.

Analysis	Water/Liquid Samples ¹				Soil/Sediment Samples ¹				
	Preservation	Container Type/Size	# of Containers	Holding Time	Preservation	Container Type/Size	# of Containers	Holding Time	Comments
pH (Corrosivity) waste	Cool, <6°C	4 oz wide mouth glass jar	1	ASAP ³					
Flash Point (Ignitability)	Ambient 70°F (high vapor pressure dry ice to maintain 40 to 100°F)	4 oz glass jar	1	high conc/ high hazard samples, analyze ASAP ⁴					
Solvent ID (FP)									
Water Content (FP)	none	500 mL polyethylene/ glass bottle	1	as soon as sample container is opened if VOCs requested					
Density	No headspace if VOCs requested		1						
Paint Filter Liquid Test	none	polyethylene/ glass bottle	1	none					
Cr(VI)	Cool, <6°C pH 9.3-9.7 NaOH/ammonium sulfate buffer	250 mL polyethylene/ glass bottle	1	24 hours if unpreserved; 28 days if preserved	Cool, <6°C	4 oz glass jar/ polyethylene	1	30 days	
Hg	HNO ₃ to pH<2	250 mL polyethylene/ glass/teflon bottle	1	28 days	Cool, <6°C	4 oz glass jar/ teflon	1	28 days	Hardness by calculation from ICP analysis. Dissolved metals requires field filtering through 0.45 µm filter.
Total/Dissolved Metals (except Hg & Cr (VI)) and Hardness	HNO ₃ to pH<2	500 mL polyethylene bottle	1	6 mo.	none	4 oz glass jar/ polyethylene	1	6 mo.	Need 3 blank filters from same lot for blanks and spikes
Total Metals air (partic.)					none	envelope or zip-loc	1	none	

⁴ ASAP for RCRA Characteristic of Ignitability is within a few days of receipt at the laboratory.

Analysis	Water/Liquid Samples ¹			Soil/Sediment Samples ¹			Comments	
	Preservation	Container Type/Size	# of Containers	Holding Time	Preservation	Container Type/Size		# of Containers
SVOCs	Cool, <6°C	1 L narrow mouth amber glass bottle	2 bottles/sample, 2 additional bottles for MS/MSD for 1/20 samples	7 days from collection to extraction, 40 days from extraction to analysis	Cool, <6°C	8 oz glass jar	1	14 days from collection to extraction, 40 days from extraction to analysis
Alkylphenols	Cool, <6°C H ₂ SO ₄ to pH<2	1 L narrow mouth amber glass bottle	1 bottle/sample, 2 additional bottles for MS/MSD for 1/20 samples	14 days from collection to extraction, 40 days from extraction to analysis				
Bisphenol A	Cool, <6°C HCl to pH<2	250 mL narrow mouth amber glass bottle	1	14 days from collection to extraction, 40 days from extraction to analysis				
APEOs, NPECS	Cool, <6°C add formaldehyde until sample is 1% (V:V)	250 mL narrow mouth amber glass bottle	1	14 days from collection to analysis				
PFCs	Cool, <6°C	50 mL polypropylene tube	5	none				
VOCs	Cool, <6°C 1:1 HCl to pH<2 No headspace	40 mL glass vial	3 vials/sample, 2 additional vials for MS/MSD for 1/20 samples	14 days	Cool, <6°C	4 oz wide mouth glass jar	1	14 days

high conc—receipt at CRL upon prior approval only

Analysis	Water/Liquid Samples ¹				Soil/Sediment Samples ¹				
	Preservation	Container Type/Size	# of Containers	Holding Time	Preservation	Container Type/Size	# of Containers	Holding Time	Comments
VOCs					soil/sediment-encore Cool, <6°C	encore sampler (5g size) 4 oz glass jar	3 1	48 hrs sampling to NaHSO ₄ preservation in lab, 14 days sampling to analysis 14 days 48 hrs sampling to MeOH preservation in lab, 14 days sampling to analysis	4 oz glass jar is for % solids backup for standard analysis if encores show problems or exceed holding times Need weight table for container+MeOH & container+MeOH+ soil; 4 oz glass jar is for % solids backup for standard analysis if encores show problems or exceed holding times
1,4-Dioxane, THF	Cool, <6°C No headspace	40 mL glass vial	3 vials/ sample, 4 additional vials for MS/MSD for 1/20 samples	14 days	soil/sediment-MeOH preserved Cool, <6°C 1:1 (w:v) sample:methanol (MeOH) (eg., 5 g sample: 5 mL MeOH)	40 mL glass vial 4 oz glass jar encore sampler (5 g size)	3 1 3		
Air Toxics indoor/ ambient air	none	2.7 L/6 L/15 L Summa air canisters with or without regulator	1	30 days					Can be collected as grab sample or time integrated. Time integrated sampling requires regulator.
Air Toxics sub-slab/ soil gas	none	1 L amber glass bottles or Summa canisters with or without regulator	1	30 days					Sub-slab taken as time integrated sample with regulator; soil gas taken as grab sample

Analysis	Water/Liquid Samples ¹				Soil/Sediment Samples ¹				Comments
	Preservation	Container Type/Size	# of Containers	Holding Time	Preservation	Container Type/Size	# of Containers	Holding Time	
Methane <i>air</i>	none	1 L amber glass bottles with or without regulator	1	30 days					Can be collected as grab sample or time integrated. Time requires sampling requires regulator.
Chlorinated Pesticides (single response) & Atrazine	Cool, <6°C	1 L narrow mouth amber glass bottle	1 bottle/ sample, 2 additional bottles for MS/MSD for 1/20 samples	7 days from collection to extraction, 40 days from extraction to analysis	Cool, <6°C	8 oz glass jar	1	14 days from collection to extraction, 40 days from extraction to analysis	If both pesticides and PCBs (w) requested, 1 1L glass bottle needed and 4 additional 1 L glass bottles for 1 in 20 samples for MS/MSD.
Chlordane (inactive)	Cool, <6°C	1 L narrow mouth amber glass bottle	1 bottle/ sample, 2 additional bottles for MS/MSD for 1/20 samples	7 days from collection to extraction, 40 days from extraction to analysis	Cool, <6°C	8 oz glass jar	1	14 days from collection to extraction, 40 days from extraction to analysis	Chlordane and toxaphene must be requested separately from each other and pesticides since they cannot be analyzed simultaneously.
Toxaphene (inactive)	Cool, <6°C	1 L narrow mouth amber glass bottle	1 bottle/ sample, 2 additional bottles for MS/MSD for 1/20 samples	7 days from collection to extraction, 40 days from extraction to analysis	Cool, <6°C	8 oz glass jar	1	14 days from collection to extraction, 40 days from extraction to analysis	
PCB Aroclors	Cool, <6°C	1 L narrow mouth amber glass bottle	1 bottle/ sample, 2 additional bottles for MS/MSD for 1/20 samples	7 days from collection to extraction, 40 days from extraction to analysis	Cool, <6°C	8 oz glass jar	1	14 days from collection to extraction, 40 days from extraction to analysis	if both pesticides and PCBs (w) requested, 1 1L glass bottle needed and 4 additional 1L glass bottles for 1 in 20 samples for MS/MSD.

Analysis	Water/Liquid Samples ¹			Soil/Sediment Samples ¹			Comments		
	Preservation	Container Type/Size	# of Containers	Holding Time	Preservation	Container Type/Size		# of Containers	Holding Time
PCB Aroclors (TSCA)	Cool, <6°C	1 L narrow mouth amber glass bottle	1 bottle/sample, 2 additional bottles for MS/MSD for 1/20 samples	7 days from collection to extraction, 40 days from extraction to analysis	soil/sediment/oil/wipes/other solid material Cool, <6°C	8 oz glass jar	1	none	
TPH (inactive)					Cool, <6°C	8 oz glass jar	1	14 days from collection to extraction, 40 days from extraction to analysis	
Oil & Grease	Cool, <6°C H ₂ SO ₄ to pH<2	1 L wide mouth clear glass bottle	1 jar/sample, 2 additional jars for MS/MSD for 1/20 samples	28 days					
TCLP waste For all Toxicity Characteristic analytes except herbicides (VOCs, SVOCs, Metals, Mercury, Pesticides)	Cool, <6°C	1 L glass bottle	2	See table below for SW-846 Method 1311 complete list of TCLP & post-extract holding times	Cool, <6°C	16 oz glass jar	2	See table below for SW-846 Method 1311 complete list of TCLP & post-extract holding times	More sample may be necessary for multiphasic samples or samples <100% but >0.5% dry solids. Additional jar is necessary if FP requested.

TCLP Holding Times

Analytes	FROM: Field collection TO: TCLP extraction	FROM: TCLP extraction TO: Preparative extraction	FROM: Preparative extraction TO: Determinative analysis	TOTAL ELAPSED TIME
Volatiles	14	NA	14	28
Semi-volatiles (SVOC/ABN)	14	7	40	61
Pesticides	14	7	40	61
Mercury	28	NA	28	56
Metals (except mercury)	180	NA	180	360

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Effective Date: 03/31/2015

APPENDIX B

CRL Sample Label

Removable ID Labels
Use Avery® TEMPLATE 5164™



www.avery.com
1-800-GO-AVERY



Canister #

Sample Name

Date /Time

Pressure

Sampler

Canister #

Sample Name

Date /Time

Pressure

Sampler

Canister #

Sample Name

Date /Time

Pressure

Sampler

Canister #

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Pressure

Sampler



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APPENDIX C

CRL Chain of Custody

